little effect on the way in which time enters into our actual measurements. This view is of questionable merit, for the so-called primitive notion of time may ultimately undergo considerable modification by the adoption of a new attitude toward its use in physics. In physical equations, time is only a convenient parameter for the comparison of physical systems. Thus, instead of comparing two systems directly with each other and setting up a one-to-one correspondence between them, we prefer to introduce a third system called a clock and compare each system separately with this. It is a convenient though arbitrary procedure. Possibly some day we shall recognize its arbitrariness more vividly and decide to do without it. In the meantime the public or social conception of time with which the conventional procedure is linked may and probably will undergo considerable change with the rapid increase in the speed of communication. Few will argue that the widespread use of radio is not going to alter the primitive conception of time among millions of listeners. The ultimate effect of this on the interpretation of physical data may be very great. The science of mechanics, which now considers that it has solved every problem of motion when it has expressed the coordinates of every system in terms of the arbitrary time parameter, would become a quite different discipline in which the setting up of direct relations among the coordinates of different systems would take the center of the stage.

To sum up, the nature of physical explanation will undergo considerable modification in the not very distant future, not merely through changes in the language used to describe physical experience, but also through an extension of the realm of this experience itself. At the same time, no matter how enlarged this realm may become, physics will continue to remain a "vicious abstraction" to the philosopher critics, since there is no likelihood that physicists will ever include *all* experience in their data. The age-old problem of the most suitable character of physical concepts, i.e., whether they should most appropriately be linked as closely as possible to actual experience or whether they should be constructed by the free use of the imagination independently of their relation to experience, will never be solved because it is a question of taste. Nevertheless, with the broadening of the data new concepts will evolve and the nature of the abstraction which is physics will always be in continual flux like everything else pertaining to man.

ENTOMOLOGY.—*New Australian Tingitidae (Hemiptera)*.[1]

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This paper contains the descriptions of three new genera, 11 new species, and one new variety of Tingitidae from Australia. The types of the new species are in my collection.

Ulonemia concava, n. sp.

Moderately large, elongate, brown, the paranota lighter in color. Head with the three front spines short, brown, tuberclelike, the hind pair short, blunt, testaceous, appressed. Rostral channel narrow, open behind, the rostrum barely reaching to middle coxae, the laminae whitish testaceous. Antennae moderately long, moderately stout; segment I a little stouter and less than twice as long as II; III long, two and one-half times as long as IV, the latter slightly thickened. Eyes moderately large, black. Legs moderately long, brown.

Pronotum moderately convex, pitted, tricarinate, the carinae distinct, not areolated, the lateral divaricating anteriorly; calli distinct, smooth; collar raised, areolated, not produced in front, the median portion slightly raised; paranota narrow, slightly reflexed, biseriate in front, very narrow, carinalike and nonreticulated behind. Elytra distinctly constricted behind the middle; costal area narrow, uniseriate, the areolae smaller at constriction; subcostal area biseriate; discoidal area bounded by sharply elevated nervures, narrowed at base and apex, widest near middle, there six areolae deep, the outer margin nearly straight.

Length, 3.45 mm; width, 0.95 mm.

[1] Received July 29, 1942.

Holotype (male) and paratype, Cedar Creek, Queensland. The paranota and constricted elytra separate it from its congeners.

Ulonemia leai, n. sp.

Moderately long, moderately broad, brown. Head brown, with five rather short, porrect, brown spines. Antennae brown, rather long, slender; segment I stouter, much stouter and twice as long as II; III nearly three times as long as IV, the latter mostly black-fuscous, moderately thickened. Rostrum extending slightly beyond mesosternum; laminae testaceous, slightly concave within on mesosternum.

Pronotum convex above, pitted, sharply tricarinate; lateral carinae distinctly divaricating anteriorly, indistinctly areolate; hood moderately large, strongly flattened above, not produced in front, very narrow and nonreticulated at humeral angles. Elytra broadest slightly beyond middle; costal area rather narrow, uniseriate; subcostal area broader, biseriate; discoidal area sharply set off by raised nervure, narrowed at base and apex, widest at middle, there seven or eight areolae deep, the outer boundary slightly sinuate; sutural area slightly more widely reticulated posteriorly. Wings longer than abdomen, smoky in color.

Length, 3.20 mm; width, 1.10 mm.

Type (female), Corns District, collected by A. M. Lea (Hacker collection). This species is broader than *U. concava* and has a distinctly dorsally flattened hood. The character of the hood will also separate it from other members of the genus.

Ulonemia decoris, n. sp.

Very similar to *U. concava* in color and form, but with the hood larger and depressed above and much broader paranota. Paranota rather broad, strongly reflexed, nearly uniform in width and not narrowed at humeri, bi- triseriate. Hood moderately large, not projecting in front, strongly depressed. Rostrum reaching meso-metasternal suture. Pronotum, elytra, and color very similar to *concava*, including constricted costal area. Antennae moderately long, brown; segment I stouter and a little longer than II; III three times as long as IV. Spines on head short, blunt, brown. Wings longer than abdomen, brownish.

Length, 3.40 mm; width, 1.00 mm.

Type (male) and allotype (female), Mount Glorious, Queensland. Paratype, 1 specimen taken with type; 6 specimens, Maleny, Queensland, January 10, 1925; Cornbiey, South Australia, N. B. Tindale.

Malandiola semota, n. sp.

Moderately large, cinereotestaceous, with brownish areas. Head convex above, brown, the front and hind pairs of spines represented by small, testaceous tubercles, the median wanting. Eyes moderately large, black, transverse. Antenniferous tubercles thick, short, testaceous. Antennae brownish, indistinctly pilose; segment I short, slightly stouter than II; III moderately long, nearly four times as long as IV, the latter short, thickened apically, mostly dark fuscous. Rostral channel deep, narrow, open behind, the rostrum extending between middle legs.

Pronotum moderately convex, pitted, tricarinate; median carina distinct, slightly elevated on triangular process; lateral carinae distinct on triangular process, becoming obsolete on disk, wanting in front; paranota very narrow, completely reflexed, carinalike at humeral angles. Collar, areolated, similar in form to *similis* Hacker, the median portion also extending triangularly posteriorly. Elytra without costal area, subcostal area triseriate; discoidal area large, widest at middle, the outer margin sinuate.

Length, 3.10 mm; width, 1.10 mm.

Type (male) and allotype (female), Murray Bridge, South Australia, H. Hacker. Paratype, 14 specimens, taken with type; 12 specimens, Williamstown and Point Lincoln, South Australia, H. Hacker; 1 specimen, Kiata, Victoria, October 1929, F. E. Wilson. This species is distinctly larger than *M. similis* Hacker and the lateral carinae are distinctly defined behind. In *similis* the lateral carinae are more or less obsolete, and the male is usually much smaller than the female. *Simplex* Horvath is a shorter species, with shorter head and collar, and the pronotum is unicarinate.

Codotingis, n. gen.

Head short, with five spines. Eyes large. Rostral channel open behind, the rostrum long. Bucculae closed in front. Orifice present. Antennae slender, with segment I and II short; III longest, slenderest; IV fusiform, moderately

long. Pronotum convex, pitted, tricarinate, moderately narrowed anteriorly; hood scarcely projecting in front, inflated, united beneath with median carina and extending posteriorly nearly to disk; paranota narrow, almost completely reflexed, reticulated. Elytra divided into the usual areas, the discoidal area large, extending beyond the middle of elytra. Wings present.

Type of genus, *Codotingis recurva*, n. sp. This genus belongs to the subfamily Tingitinae. It may be separated from *Leptoypha* Stal, *Melandiola* Horvath, and other allied genera by the hood.

Codotingis recurva, n. sp.

Small, reddish brown, the hood and elytra lighter in color. Head reddish brown, the median spine short, tuberclelike, the front and hind pairs slender, testaceous, appressed; eyes large, reddish. Antennae moderately long, slender, yellowish brown, the apical segment black; segment I short, stouter and less than twice as long as II; III slender, testaceous, three times as long as IV. Rostrum long, extending almost to end of sulcus, the sulcus gradually widening posteriorly.

Pronotum distinctly tricarinate, the lateral carinae long, thin, divaricating a little anteriorly; median carina slightly higher than lateral; hood small, inflated, projecting posteriorly, the crest located behind; paranota very narrow, uniseriate, totally reflexed except opposite calli, there nearly vertical. Elytra broadest opposite apex of triangular process, somewhat narrowed apically, completely overlapping and jointly rounded behind when at rest; costal area narrow, recurved, the outer margin not touching subcostal area; subcostal area wider, biseriate; discoidal area widest beyond middle, there seven areolae deep, the outer margin faintly raised and strongly bowed; sutural areas more widely reticulated.

Length, 2.65 mm; width, 1.20 mm.

Type (female), Nanango District, Queensland, November 1927, taken by H. Hacker.

Callithrincus serratus Horvath

Two specimens, male and female, National Park, Queensland, May, 1934, F. A. Perkins. The male is distinctly narrower than the female. The antennae are moderately long, slender, brown, the apical half of terminal segment black, thicker and hairy; segment I short, stouter and twice the length of II; III very slender, straight, three times as long as IV. The rostral channel is deep, narrow, entirely open behind, the sides foliaceous and areolate; rostrum very long, not quite reaching the end of the sulcus. The bucculae are broad, areolate, and closed in front.

Callithrincus signatus, n. sp.

Color, shape, and general appearance very similar to *C. serratus* Horvath, but separated from it by the triseriate costal area, median carina less foliaceous on disk, and the paranota much less turned up and less elevated within. Rostrum long, extending to end of sulcus. Antennae brown, the distal half of last segment black; segment III very slender, three times as long as IV. Head with five stout, moderately long spines. Pronotum moderately convex, truncate in front, the erect protuberance at base of collar smaller than in *serratus* and the setose hairs on paranota fewer and shorter; median carina sharply arched but not strongly foliaceous on disk, moderately elevated apically. Nervure separating subcostal and discoidal areas sinuate, the erect, setose hairs mostly wanting or greatly reduced. Costal area irregularly bi- triseriate, the outer margin spined as in *serratus*. Other characters very similar to *serratus*.

Length, 2.95 mm; width, 1.25 mm.

Type (male) and allotype (female), Mount Glorious, Queensland, September 26, 1928, H. Hacker.

Inonemia, n. gen.

Head not strongly produced in front, with two hind spines; clypeus prominent, ridgelike; eyes moderately large. Antenniferous tubercles short, stout; antennae moderately long, rather slender; segment I short, a little stouter and longer than II; III longest, straight; IV moderately long, scarcely thicker than III. Bucculae very broad, reticulated, closed in front. Rostrum extending to mesosternum; rostral channel rather broad, the laminae rather low, meeting behind. Legs short, the femora short. Orifice indistinct. Pronotum moderately convex, pitted, tricarinate, the lateral carinae long, strongly divaricating anteriorly; calli present; collar raised, reticulated; hood absent, paranota expanded and reticu-

lated in front, wanting on posterial half. Elytra considerably wider than pronotum, divided into usual areas, the outer margin of costal area strongly, arcuately rounded at the base; wings present.

Type of genus, *Inonemia mussiva*, n. sp. Allied to genera *Neotingis* Drake and *Acysta* Champion but easily distinguishable by its semilacy appearance, distinctly divaricating lateral carinae, short femora and paranota. The head is also a little longer and broader; the pronotum, paranota, and elytra are very similar in texture and appearance.

Inonemia mussiva, n. sp.

Cinereotestaceous, with indistinct brownish areas. Head reddish brown; eyes reddish black; hind pair spines short, testaceous, appressed, not reaching middle of eyes. Antennae indistinctly pilose, testaceous, the tip of terminal segment black; segment II about twice as long as IV. Rostrum and laminae dark fuscous. Legs short, beset with short setae, testaceous, the femora short, rather stout, reddish brown.

Pronotum coarsely pitted, truncate in front, a little darker in color than elytra; calli impressed, dark brown; carinae distinct, not foliaceous; paranota short, projecting laterally, biseriate, not extending posteriorly beyond calli; hind triangular process large, more coarsely pitted. Elytra broad at base, about the width of costal area, wider than pronotum, widest near the basal third, thence narrowed posteriorly; costal area rather broad, mostly biseriate, the areolae not very large and nearly rounded; subcostal area long, rather narrow, triseriate in widest part; discoidal area large, extending considerably beyond middle, widest near middle, there six or seven areolae deep, the areolae small and rounded; sutural area large, areolae becoming a little larger distally.

Length, 2.30 mm; width, 1.10 mm.

Type (male) and allotype (female), Roma, Queensland, November 30, 1930, L. Franzen.

Inonemia mussiva brevis, n. var.

Very similar to *I. mussiva* n. sp. but with much shorter antennae, the entire antennae being shorter than the third antennal segment of *mussiva*. Antennae short, testaceous, the apical third or fourth black; segment I short, scarcely longer or thicker than II; III twice as long as IV. Other characters similar to *mussiva*.

Type (female), Roma, Queensland, November 30, 1930, collected by L. Franzen.

Engynoma, n. gen.

Head short, convex above, with five slender spines. Eyes moderately large, transverse. Bucculae broad, areolated, closed in front. Rostral channel rather deep, moderately wide, open behind, the laminae foliaceous. Antennae rather slender, moderately long; segments I and II short, moderately thickened; III long, slender; IV fusiform, moderately long. Pronotum convex above, moderately narrowed anteriorly, tricarinate; all carinae long; hood absent; collar distinct, areolated, with two erect spines. Calli present; paranota narrow, linear, reflexed, areolated, with or without spines on margins; hind process long, triangular. Elytra longer than the abdomen, jointly overlapping behind when at rest, with the usual areas sharply defined. Legs moderately long, slender.

Type of genus, *Engynoma* (*Perissonemia*) *tasmaniae* Drake and Poor. *Tingis spinicollis* Horvath, *T. angulata* Hacker, and *T. insularis* Hacker also belong to this new genus. In these four species and the two new forms described below, there is an erect, slender, moderately long, sharp spine on each side of the median line (near the middle) of the collar. In *spinicollis*, *angulata*, and *insularis*, the lateral margins of the paranota are also armed. In *immaculata* n. sp., *deaba* n. sp., and *tasmaniae* (Drake and Poor), the paranota are unarmed. The six known species are all rather similar in appearance and from the Australian region.

Engynoma immaculata, n. sp.

Elongate, narrow, testaceous; legs and antennae brownish, the tarsi and terminal segment of antennae black. Head pale brown, with five long, slender, testaceous spines. Rostrum brown, extending almost to middle of mesosternum, the laminae pale testaceous, not meeting behind.

Pronotum moderately convex, finely pitted, carinae distinctly more foliaceous than in *tasmaniae*, uniseriate, the areolae broader; paranota also distinctly broader, uniseriate, strongly reflexed, uniseriate behind, biseriate in front, the outer row of areolae large, broader than long, rectangular; collar rather long, finely areolated, the two spines erect, slender, rather

long. Elytra elongate, slightly constricted beyond the middle, the margins subparallel; costal area slightly reflexed, rather narrow, mostly biseriate, the inner row of areolae very small and sometimes disappearing at the constriction; subcostal area a little broader, triseriate; boundaries separating subcostal, discoidal and sutural areas distinctly raised, finely areolated. Legs slender, pale brown, the tarsi black.

Length, 3.00 mm; width, 0.80 mm.

Holotype (male), Cedar Creek, Queensland, January 25, 1931, H. Hacker. This species is more elongate and has more foliaceous carinae and paranota than *tasmaniae*. It is not easily confused with other members of the genus.

Engynoma deaba, n. sp.

Moderately large, cinereotestaceous, with a few small, black-fuscous markings. Head dark brown, shiny, with five testaceous spines, the median porrect. Rostral channel narrow, deep, the laminae testaceous, foliaceous, not meeting behind; rostrum dark brown, reaching between middle legs. Antennae testaceous, indistinctly pilose; segment I short, slightly longer and stouter than II; III about two and one-half times as long as IV, the latter fusiform and mostly black. Eyes rather large, black. Legs testaceous, the tips of tibiae and tarsi dark fuscous.

Pronotum moderately convex, pitted, tricarinate; carinae foliaceous, each uniseriate; the areolae moderately large, the lateral pair slightly diverging anteriorly, slightly concave within on disk; collar distinct, areolated, the two spines erect; paranota rather narrow, moderately reflexed, slightly wider opposite calli, uniseriate; triangular process with a transverse, black-fuscous band near the middle extending across costal and subcostal areas; boundaries separating subcostal, discoidal and sutural areas moderately elevated, finely areolated; costal area uniseriate, the areolae moderately large; subcostal area triseriate, the areolae small.

Length, 3.20 mm; width, 1.10 mm.

Holotype (female) and paratype, National Park, Queensland, December, 1933, H. Hacker. This insect is a little larger than *angulata* (Hacker), *insularis* (Hacker) and *spinicollis* (Horvath) and the lateral margins of the paranota and elytra are without spines.

Furcilliger comptus, n. sp.

Moderately large, obovate, brownish to yellowish brown, sometimes with a few small fuscous spots, armed with numerous slender spines, and rather densely clothed with fine, decumbent hairs. Head brownish, with five long, slender nearly erect, brown spines; eyes rather small, dark. Rostrum long, brownish, black at apex, extending almost to end of sulcus; laminae thick, high, finely hairy, not widely separated, entirely open behind. Bucculae broad, V-like excavated in front, meeting at the base, produced downward at each end in front so as to form a small tooth. Legs moderately long, pale brown, beset with numerous, short, bristly hairs. Antennae moderately long, brownish; segments I and II thick, beset with bristly hairs, the latter shorter and obconical; III long, slender; IV absent.

Pronotum rather strongly convex, clothed with numerous short hairs, tricarinate; lateral carinae strongly converging behind disk and then slightly converging anteriorly until they become contiguous with the sides of the median carina, terminating in front at base of hood, each finely areolated; median carina distinctly more elevated on disc, there arched; all carinae beset with slender spines; hood small, scarcely produced in front, highest near center, there with a forked spine. Paranota almost completely reflexed, beset with numerous sharp spines, the outer margin turned up so as to appear almost like lateral carinae. Triangular process rather large, hairy, areolate. Elytra clothed with fine hairs, with lateral margins and nervures separating areas beset with slender spines; costal area rather broad, with three, moderately large, confused rows of areolae, the areolae hyaline; subcostal area narrower, biseriate; discoidal area large, widest a little behind middle, the outer margin sinuate. Sides of thorax beset with fine bristly hairs. Venter brownish, with shorter bristly hairs. Wings smoky, nearly as long as elytra, the latter a little longer than abdomen.

Length, 3.90 mm; width, 1.80–2.00 mm.

Type (male), allotype (female), and 2 paratypes, Imbil, Queensland, January, 1936, collected by A. R. B. Combs, on *Gmelina leichhardtii* (family Verbenaceae). This species has differently formed paranota, carinae, and wider costal area than *T. asperulus* Horvath. It is

also clothed with hairs and armed with many more spines. There may be some question regarding the generic position of *comptus* n. sp., but it seems advisable to place it in *Furcilliger* Horvath until the limits of the genus are more clearly defined.

Leptopharsa enodata, n. sp.

Head brown, convex above, with five moderately long spines, the three frontal spines testaceous and erect, the hind pair brownish and appressed. Bucculae broad, reticulated, contiguous at the base in front, the margins in front above the base angulately excavated so as to form a V-opening. Rostral channel wide, wider and concave within on mesosternum, the laminae rather low, testaceous, reticulated; rostrum extending to middle of mesosternum. Antennae very long, slender, testaceous, the apical segment mostly black; segment I very long, nearly four times as long as II, the latter short; III very long, slenderest, four times as long as IV; IV long, slightly thickened, about equal in length to I and II taken together. Body beneath black. Legs testaceous, slender, the tarsi black. Eyes transverse, moderately large, black.

Pronotum brown, rather strongly convex, pitted, reticulated behind, tricarinate; median carina mostly uniseriate, arched on disk, there bi- or triseriate; lateral carinae uniseriate, strongly constricted behind disk; hood rather small, inflated, scarcely produced forward, the crest about the center; paranota rather narrow, mostly biseriate; the outer margin broadly rounded. Elytra widest in front of middle, somewhat narrowed apically, slightly constricted behind middle, the outer margin finely serrate; costal area rather broad, irregularly triseriate; subcostal area more closely reticulated, quadriseriate; discoidal area narrowed at base and apex, extending beyond middle of elytra, widest beyond middle, there six areolae deep, the outer boundary sinuate. General color of reticulation brownish, somewhat variegated with dark brown or fuscous areas. Areolae largely hyaline.

Length, 3.20 mm; width, 1.30 mm.

Type (male), allotype (female), and 1 paratype, North Pine River, Queensland, September 15, 1920, H. Hacker; 1 paratype, Conodale, Queensland, January 7, 1930, H. Hacker. This species is much slenderer than *gracilis* (Hacker) and has much narrower paranota, narrower costal area, and less foliaceous median carina. The reticulations are also a little thicker.

ICHTHYOLOGY.—*Seven new American fishes.*[1] Isaac Ginsburg, Fish and Wildlife Service. (Communicated by Elmer Higgins.)

This paper originated in and is part of the result of a study of material received from two sources: (1) Some species collected by the research vessel *Atlantis* in 1937 and kindly submitted to me for study by Dr. Albert E. Parr when he was director of the Bingham Oceanographic Foundation; (2) a part of the collection of fishes obtained by the research boat *Pelican* in connection with the shrimp investigation of the Fish and Wildlife Service, which came into my hands through the courtesy of my colleagues in the service, Milton J. Lindner and William W. Anderson. Three undescribed species from the northern part of the Gulf of Mexico were found in those two collections. In attempting to distinguish properly *Emblemaria piratula* and determine its affinities, I discovered three undescribed species of that genus in the National Museum, and mixed in with the Emblemarias one new goby. All these species are described herein. Two of the species are described from specimens obtained by the well-known Wilkes Expedition more than a hundred years ago. All the holotypes are in the U. S. National Museum. Paratypes of two species are deposited in the Bingham Collection.

Bollmannia communis, n. sp. (Gobiidae)

Soft dorsal and anal predominantly with 14 rays, sometimes 13 or 15. (Out of 78 specimens in which the rays were counted in both fins, 64 have the predominant counts; 2 have 13 rays in both fins; the other 12 variants have only either fin with 13 or 15 rays while the other has 14.) Pectoral rays 21–23, the tip of

[1] Received July 18, 1942.

the fin reaching a vertical variably placed between the bases of the first to third dorsal ray. Approximately upper third of opercle almost entirely covered with two large scales. Cheek well scaled from about middle of eye backward, except a rather broad naked strip along its lower margin. Fourth or fifth spine the longest, tip of longest spine usually reaching, when stretched along the back, to base of fourth ray of second dorsal in large male, varying from base of third to seventh; to base of first or second ray in female. Posterior dorsal and anal rays of male reaching more or less beyond end of hypural, those of female about reaching there or slightly short. Tip of ventral fin about reaching anus, often slightly past anus in male or slightly short in female. As compared with all 11 species of *Bollmannia* now authentically known, the caudal is rather long, longer or as long as in most of them, but averaging shorter than in *longipinnis;* the head averages moderately long and the eye is medium to rather large. First dorsal with a posterior black spot; male with a broad, black or dusky band on the distal margin of the same fin· other fins shaded more or less with dusky or blackish; head and body usually without definite marking, body sometimes with a median row of five faint smudges.

This species is described from 81 specimens, 45–108 mm, obtained in the northern part of the Gulf of Mexico; 37 specimens obtained by the *Atlantis* in 1937 at 5 stations; 44 specimens obtained by the *Pelican* during 1938–39 at 16 stations. The extremes of the geographic range of the samples studied are from off Padre Island, Tex., to off the Mississippi Delta; between latitudes 26° 34′ and 29° 29′ and longitudes 88° 46′ and 96° 53′ 30″. The extremes of the vertical range are 3.5 to 45 fathoms. This is evidently a common species in that region, and it is remarkable that it has remained undiscovered up till now. It is not that it has been masquerading under an alias. As far as I know, no specimens have ever been recorded under any name. It probably has a circumscribed geographic or vertical distribution.

Holotype, U.S.N.M. no. 119873: *Pelican* station 77-1; 28° 59′ N., 89° 29′ W.; 10 fathoms; male, total length 83 mm, standard length 52.5 mm; caudal 59, ventral 30.5, pectoral 26.5 depth 25, peduncle 12.5, head 29, postorbital, 13.5, head depth 20.5, head width 17, maxillary 13.5, snout 9, eye 8.5, antedorsal 34.

This species is structurally nearest to *Bollmania* (sic) *litura* Ginsburg (Smithsonian Misc. Coll. **91** (20). 1935), from the coast of Haiti. It has the eye not so large as in *litura* (which has a very large eye, larger than in any known species of its genus); there are no intergrades in this measurement among specimens of the two species so far measured. The second dorsal and anal counts are distinctly higher in *communis,* although there is some slight degree of intergradation. The head and postorbital average less in *communis;* but there is considerable intergradation in those measurements.

Another congener that occupies adjacent waters, *B. boqueronensis* Evermann and Marsh, differs from *communis* in having a lengthwise row of scales along the lower margin of the cheek; a shorter head, there being no intergrades in the specimens measured; and fewer dorsal and anal rays but with a slight degree of intergradation.

Recently Fowler described what he took to be a new species, *Bollmannia jeannae* (Proc. Acad. Nat. Sci. Philadelphia **93**: 95, figs. 7–9. 1941) from off Key West. I have not examined Fowler's specimens, but judged by his description and figure it is evident that they do not belong to the same species as *communis. B. jeannae* is probably based on specimens of *Bollmannia boqueronensis;* anyway his description and figure do not prove that they differ from it. Fowler does compare his *jeannae* with *boqueronensis* and points out certain differences, but they do not hold. The same differences are apparent also when authentic specimens of *boqueronensis* are compared with the figure published by Evermann and Marsh. This is because that figure is not altogether accurate. But the supposed differences are seen to be nonexistent when correctly identified specimens of *boqueronensis* are studied.

Garmannia mediocricula, n. sp. (Gobiidae)

Garmannia hemigymna Fowler (not Eigenmann and Eigenmann), Proc. Amer. Philos Soc. **82**: 791. 1940 (Rio de Janeiro).

D. VII; 12–13. A. 10. P. 20–21.

Anterior scales, from near base of pectoral to under space between the two dorsals, in a

very narrow band of one row and a second incomplete row; thence scaled area broadening out in wedge-shaped manner to ends of vertical fins; caudal peduncle completely scaled. About 34 scales in a complete longitudinal row. (Most scales in caudal row missing; but judged by traces of their impressions there were probably 4.) First spine in male shorter than second. Head subterete. Maxillary in male ending approximately under posterior margin of pupil. (The two specimens are now uniformly dark; possibly any color pattern originally present has faded by now.)

Ventral 24.5, pectoral 24–24.5, depth 20.5, peduncle 14.5, head 30.5–31, postorbital 18.5–19, head depth 16–17, head width 17, maxillary 13.5, snout 7.5–8.5, eye 8.5–9.5, antedorsal 38.

This species is described from two specimens, 28–29 mm as now measured, the caudals frayed at the end, 23–23.8 in standard length; obtained by the Wilkes Expedition at Rio de Janeiro. The smaller specimen is designated the holotype, U.S.N.M. no. 119876.

The extent of squamation of this species is rather intermediate between *G. hildebrandi* and *G. paradoxa*, from the Atlantic and Pacific coasts of Panama, respectively; but as shown by the lateral line organs *mediocricula* is nearer structurally to the Pacific *paradoxa*. Besides some differences in the details of the lateral line organs, *mediocricula* differs from *paradoxa* in having a subterete, instead of depressed, head, more pectoral rays and a more extensive squamation. Of its Atlantic coast congeners, *mediocricula* is probably nearest to *G. spes;* but no specimen of *spes* of adequate size is available for comparison. It differs widely from *spes* in the number of pectoral rays.

While I have so far not examined the type of *Gobius hemigymnus* Eigenmann and Eigenmann, their description differs so widely and in so many important particulars from the two specimens here described that they cannot belong to that species as they were identified by Fowler. *"Gobius" hemigymnus* is probably a species of *Risor*.

Lonchopisthus lindneri, n. sp.
(Opisthognathidae)

D. X–XI 18. A. III 16–17. P. 18–19. Caudal with 16 segmented rays.

Gill rakers 18–22 on upper limb of first gill arch, 33–36 on lower limb; total number of gill rakers on first arch 51–55 (range of both sides of the three specimens studied). Scales in 59–60 oblique rows below lateral line and 25 rows behind lateral line, to base of caudal; 37–39 scales in lateral line, ending under base of sixth soft ray. Scales present on antedorsal area to a vertical at a little distance behind posterior margin of eye; present also on throat in front of ventral base, and on pectoral base; cheek nearly all scaled behind a vertical through posterior margin of eye; a patch of scales on upper anterior part of the opercle in three or four lengthwise rows and extending over about anterior half of opercle; the narrow space between lateral line and base of dorsal with a lengthwise row of embedded, sometimes partly with nonimbricate scales, the row sometimes partly interrupted. Maxillary ending on a vertical behind eye, at a distance a little less than diameter of pupil, its posterior edge well emarginate, with a large supplemental bone. Second soft ventral ray, from its outer margin, notably prolonged, reaching past origin of anal. Posterior edge of pectoral on a vertical approximately through base of tenth dorsal spine. Soft rays of dorsal and anal unbranched, except last three or four branched, the last one divided to its base. Teeth in a single row in each jaw, of moderate size, none notably enlarged; no teeth on vomer.

Head and body uniformly colored in one specimen, anterior part of body with a few very faint, light, narrow, diffuse cross bands against a darker background in two; vertical fins dusky, caudal darkest becoming black posteriorly; outer surface of lower lip with a black area at angle of mouth, wedge-shaped, tapering anteriorly towards upper margin of lip, extending about midway between angle of mouth and symphysis of jaw, sharply marked in two specimens, rather faint in one.

Measurements of two specimens 96–105 mm, 60.1–61.7 mm in standard length. Caudal 59–70.5, pectoral 23–24, depth 26.5–29, peduncle 9–9.5, total length of head 30.5–32.5, length of head to tip of opercular spine 27.5–30, total length of postorbital 16–18.5, head depth 23–23.5, head width 14–15.5, maxillary 17.5–18.5, snout 5–6, eye 10–11, antedorsal 31.5–32.5.

This species is described from three specimens: *Pelican* station 112-4; off Padre Island, Tex.; 27° 13′ N., 96° 47′ W.; 33 fathoms; 64

mm in standard length with a teratological jaw on one side and generally in poor condition. *Atlantis* station 2840; off Isle Derniere, La.; 28° 19′ N., 90° 59′ W.; 31 fathoms; 61.7 mm in standard length. *Pelican* station 112-3; off Padre Island; 27° 13.5′ N., 96° 40′ W.; 42 fathoms; 60.1 mm in standard length. The species thus inhabits the same region, at the same depth, as *Bollmannia communis*. The latter two specimens were taken together with that species. The last specimen is designated as the holotype, U.S.N.M. no. 119874. The specimen obtained by the *Atlantis* is deposited in the Bingham Collection.

This species is nearest to *L. micrognathus*, a short account of which is given below for the purpose of comparison. It differs chiefly in having fewer gill rakers on the first gill arch. The cross-banded color pattern, judged by current descriptions of *micrognathus*, is apparently less distinct in *lindneri*. Judged by the specimens examined, it appears that *lindneri* may differ in the frequency distributions of some characters, namely, in averaging a lower scale count, a higher soft dorsal and pectoral count, a longer head, maxillary and antedorsal distance, and a larger eye, possibly also a longer caudal; but these can be determined only from much larger samples than those available. It may be of some significance that one of the three specimens of *lindneri* has 10 dorsal spines, whereas *micrognathus* appears to have constantly 11. This species is named for Milton J. Lindner, of the Fish and Wildlife Service.

Lonchopisthus micrognathus (Poey)

D. XI 17–18. A. III 16–17. P. 18.

The above counts are based on three specimens from Cuba which I had for comparison with the preceding species: Poey's two types (U.S.N.M. no. 4785), 59–76 mm in standard length, now in bad condition; a small specimen 24 mm in standard length (no. 82510). Gill rakers in the two larger specimens 22–24 on upper limb of first gill arch, 39–40 on lower limb, total count 62–63 (range of one side of each). Oblique rows of scales below lateral line about 62–74. Caudal broken in the larger specimen, probably entire or nearly so in the two smaller, 44.5–50.5. In the two larger specimens: head to tip of opercular spine 26–27.5, maxillary 16–17, eye 9–9.5, antedorsal 28.5–29.5. Longley (Carnegie Inst. Washington Publ. **535**: 244. 1941) states that all his Tortugas specimens of this species had 11 dorsal spines, the same count as determined by me.

Emblemaria signifer, n. sp. (Blenniidae)

Emblemaria atlantica Fowler (not Jordan and Evermann), Proc. Amer. Philos. Soc. **82**: 796. 1940 (Rio de Janeiro).

D. XX 12. A. II 20–21. P. 13.

First dorsal spine notably longer than following spines, in form of long filament, its tip reaching, when stretched along back, to base of tenth dorsal spine; second spine less than half length of the first; third spine subequal to second; fourth appreciably longer than preceding two; gradually increasing in length from fourth to eighth; eighth to eleventh subequal; thence gradually decreasing; last spine notably short, about half of first segmented ray; distal edge of dorsal thus with two well marked depressions, one behind first spine, the other between the two parts of the fin. Orbital cirrus very short, less than diameter of pupil, rather broad, unbranched, without fimbriae; narial cirrus slenderer and slightly longer. Maxillary reaching a vertical behind eye at a distance slightly over half its diameter in the larger specimen, not quite as far in smaller. Ventral apparently falling considerably short of anus (broken near its end). A few dark spots near base of dorsal distantly placed from one another, not alined in a regular row; anterior part of dorsal black basally, with a whitish margin; color evidently faded now and no other marks discernible.

Measurements of holotype, U.S.N.M. no. 119877, Rio de Janeiro, Wilkes Expedition: Total length 33 mm, standard length 27.8 mm, caudal 19.5, depth 18.5, peduncle 9, head 25.5, postorbital 15.5, maxillary 14.5, snout 7, eye 7, antedorsal 19.5. This account is drawn from the holotype and one paratype, 27 mm (U.S.N.M. no. 83144), the two specimens originally in the same lot.

The specimens here described do not belong to *E. atlantica* as they were identified by Fowler, but to a hitherto undescribed species. In fact, *signifer* is one of the more strongly marked species of its genus. The soft dorsal count is lower than in any species of *Emblemaria* so far discovered; the spinous dorsal and

anal counts are lower than in most of them; the outline of the dorsal, especially the filamentous and very long first spine as compared with the following spines is different than in any of them. (The dorsal outline of *guttata*, the next species described, comes nearest to that of *signifer*, but the difference is still considerable.) The latter character may possibly differ with age and sex. That remains to be determined. But it is very unlikely that such sex or age differences, if any, will be sufficiently pronounced to mask species differences. The combination of the above characters, together with the very short orbital cirrus, should make the identification of specimens of *signifer* an easy matter.

Emblemaria guttata, n. sp.

D. XXII 14. A. II 23. P. 14.

First dorsal spine moderately longer than second, its tip reaching base of ninth dorsal spine; the spines gradually increasing in length from second to fourth, thence decreasing; last spine considerably shorter than first segmented ray; the distal dorsal edge thus with two moderate emarginations, one behind first spine and one between the two parts of the fin. Orbital cirrus slender, medium, somewhat less than eye diameter, branched at base; narial cirrus still shorter, likewise branched. Maxillary reaching a vertical past eye at a distance about equaling half its diameter. Ventral ending at a considerable distance before anus.

An area on upper half of fish, under anterior part of dorsal, comprising posterior part of head and anterior part of body, irregularly beset with small dark spots; a median row of somewhat larger spots on body from base of pectoral backward, well marked on anterior part of body, faint or hardly perceptible on posterior part; anterior part of dorsal, between third and seventh spines and centered along middle of fin, with a large very dark brown spot, elongate-elliptical with its long axis in a lengthwise direction, rather well marked off from surrounding pigment; basal area of fin below spot very light, distal area and that behind spot dark, but appreciably lighter than spot.

Holotype, U.S.N.M. no. 101999; Secas Isle, Panama; 12 fathoms; W. L. Schmitt; February 5, 1935. Its measurements are as follows: Total length 36 mm, standard length 30.7 mm; caudal 18, peduncle 9, head 29.5, postorbital 16.5, maxillary 16.5, snout 6.5, eye 9, antedorsal 20.

This species about agrees with *E. nivipes* Jordan and Gilbert, another species from Panama, in the number of dorsal and anal rays and in having a rather small, ramose orbital cirrus; it differs in the outline of the dorsal and in color. The dorsal outline of *guttata* resembles that of *signifer* described above from the Atlantic, but the two depressions in the fin are rather shallow, not so pronounced as in the latter. The rather profuse and fine spotting on part of the head and body is unlike the species of *Emblemaria* so far discovered, most of which have a diffuse and rather faint cross-banded color pattern.

Emblemaria piratula Ginsburg and Reid, n. sp.[2]

Suborbital very rough and bony at the surface, irregularly rugose and pitted, its distal margin somewhat roughly and irregularly crenate; anterior upper quadrant of orbital rim likewise bony and irregularly, rather rudimentarily tuberculate, but without definite, well-marked tubercles; two parallel ridges on upper aspect of snout presenting somewhat same appearance as orbital rim. Dorsal modally with 19 spines (in 9 specimens), sometimes with 18 (in 1) or 20 (in 2); segmented rays usually 14 (in 6) or 15 (in 5), sometimes 13 (in 1); total dorsal count 33 (in 7) or 34 (in 5). Anal with 2 flexible spines, modally with 21 segmented rays (in 8), often with 20 (in 4). Pectoral rays typically 13 (in 9), sometimes 12 (in 1). Anterior part of dorsal high, the spines increasing in length from first to fourth or fifth; tip of fourth spine about reaching base of twelfth to fifteenth; fourth to sixth spines highest, subequal; thence decrease gradually in length; last spine subequal to first segmented ray, the two parts of the fin nearly altogether and smoothly continuous. Orbital cirrus well developed, rather stout, long, nearly reaching to dorsal origin or a little short (broken off in most specimens); simple narial cirrus less than eye

[2] After I had drawn up a preliminary account of this species based on the *Pelican* specimen, I went to compare it with material of its genus in the National Museum and found that Earl D. Reid had independently come to the conclusion that the *Albatross* specimens represented an undescribed species. We therefore agreed to publish this species jointly.—I. G.

diameter. Maxillary reaching a vertical past eye at a distance about equalling diameter of pupil or not quite that far. Tip of ventral reaching anus or falling moderately short. Posterior margin of pectoral approximately on a vertical through anal origin.

Color of comparatively recently preserved specimen: Anterior part of dorsal black with a subtriangular whitish area near base, the black color gradually fading out posteriorly; head and body dusky, nearly uniformly sprinkled with minute, nearly microscopic, dark dots, except light, pigmentless areas on upper posterior part of head, upper, anterior part of body, and along dorsal base; no other distinctive markings. The specimens collected in 1885 have the color of the dorsal as described above, except that in some of them the black pigment is absent near the base of the fin; the head and body have now faded.

Measurements of one paratype: Total length 25 mm, standard length 21.4 mm; caudal 18, depth 17.5, peduncle 8.5, head 28, maxillary 14, snout 6.5, eye 6.5.

Holotype: U.S.N.M. no. 119875; *Pelican* Station 142-6; off St. Andrews Bay, Fla.; 29° 56′ N., 86° 7.5′ W.; 18 fathoms; 22 mm. In addition, the National Museum has 11 specimens, 22–27 mm, obtained by the *Albatross* in 1885 at three stations off the west coast of Florida, in 24–26 fathoms, as follows: Station 2406, 28° 46′ N., 84° 49′ W., 26 fathoms (U.S.N.M. no. 101091); station 2407, 28° 47′ 30″ N., 84° 37′ W., 24 fathoms (no. 101090); station 2374, 29° 11′ 30″ N., 85° 29′ W., 26 fathoms (no. 101089). The above account of the species is drawn from these 11 paratypes and the holotype. One specimen, 20 mm, in no. 101091 is in bad condition, and its identification not altogether certain.

This is a well-marked species. The black anterior dorsal with its well-marked white spot at the base is very distinctive and imaginatively suggests the pirate's flag. The spinous dorsal and the anal counts average lower than in all species of *Emblemaria*, except *signifer*. The rough, bony suborbital gives it a distinctive appearance. In other species of *Emblemaria* the suborbital is also rough after the skin is removed; but in *piratula* it is so at the surface, and more decidedly so. This as well as the strong ridges on the snout apparently represent the initial stages in the development of the head armature as seen in the related genus *Acanthemblemaria*.

Emblemaria piratica, n. sp.

D. XXI·13. A. II 24. P. 13.

Upper aspect of snout with two lengthwise parallel rows of bony tubercles, one on each side of and near to midline, four tubercles in a row, one similar tubercle on midline between the two rows, near their posterior end; upper anterior quadrant of orbital rim roughly tuberculate, but not with the rather clear-cut tubercles of snout; one tubercle slightly behind and below nostril; suborbital not bony nor rough at surface. First three spines very high, subequal, tip of third reaching to base of sixteenth dorsal spine; fourth to sixth spines considerably shorter than first three, and moderately shorter than following spines, the margin of the dorsal therefore forming a moderate depression behind anterior three spines; the spines from seventh backward gradually decreasing in length; the last spine but little shorter than first segmented ray, the two parts of the fin thus nearly continuous, forming one fin with but a slight depression between them. Orbital cirrus about half diameter of eye, very slender, not branched; narial cirrus similar, somewhat shorter. Maxillary reaching a vertical past eye, at a distance a little less than diameter of pupil. Tip of ventral falling only a little short of anus.

Head and body a nearly uniform reddish brown; body with rather faint spots in a median row, the anterior ones very faint, the posterior ones somewhat better marked. The anterior and highest part of dorsal black; the more posterior part of spinous dorsal, from fifth spine backward, traversed by broad, oblique bands, running obliquely downward and backward, alternating black or dusky and light yellowish pigmentless; the soft dorsal dusky basally and distally, light and pigmentless along its middle part, lengthwise; anal with a broad blackish marginal area, more intensely pigmented anteriorly than posteriorly, the basal part of fin dusky; ventral dark, nearly black; pectoral and caudal light.

Holotype and only specimen studied: U.S. N.M. no. 101944; Secas Isle, Panama, 12 fathoms; W. L. Schmitt; February 5, 1935. Total length 28 mm, standard length 23.8 mm; caudal 18.5, depth 18.5, peduncle 7.5, head 28,

postorbital 16.5, maxillary 12.5, snout 6.5, eye 8.5, antedorsal 19.

The presence of distinct rather well developed bony tubercles on the upper aspect of the snout sets off *piratica* from all its congeners now known. The other species of *Emblemaria* have bony ridges in the same location. In *piratica* these ridges have developed distinct tubercles. As noted under *piratula*, here also this character evidently represents one of the first stages in the development of the armature of the head, which reaches a high degree in *Acanthemblemaria*.

ZOOLOGY.—*Further remarks on some Mexican* Urosaurus.[1] M. B. Mittleman. (Communicated by Herbert Friedmann.)

A short time ago I had occasion to discuss *Uta nelsoni* Schmidt in a review of the Mexican so-called *Uta ornata* complex. I indicated at the time (This Journal 31: 72–73. 1941) that on the basis of the type alone this nominal form seemed distinct enough from *bicarinata* and *anonymorpha* but was probably best disposed of as a subspecies of *bicarinata*. More recently (Bull. Mus. Comp. Zool. 91: 168. 1942), because no additional material had come to hand, I reiterated my former statement but included *nelsoni* as well as *bicarinatus* and *anonymorphus* in the redefined genus *Urosaurus*. As matters stood, *U. b. bicarinatus* was thought to range not farther east than Acapulco, Guerrero; *U. b. anonymorphus* was known to occur from Tierra Colorada, Guerrero to Tonolá, Chiapas; the unique type of *U. b. nelsoni* was known from Cuicatlán, Oaxaca.

Through the kindness of Dr. Edward H. Taylor I have had opportunity to examine, and report herewith, four *Urosaurus* from the type locality of *nelsoni* (EHT–HMS nos. 14054–57); in addition, Dr. Taylor has kindly lent me three *Urosaurus* from Totolapan, Oaxaca, which is about midway between Cuicatlán and the previously known range of *anonymorphus*. The seven specimens are exceedingly interesting, clarifying as they do the status of *nelsoni* and offering further information on the relationships and distribution of *bicarinatus* and *anonymorphus*. The apparent differences, which I previously reported as existing between *nelsoni* and the more southerly races *bicarinatus* and *anonymorphus*, now appear to rest solely on the basis of individual variation in the type specimen of *nelsoni* (U.S.N.M. no. 46836). With good series of *anonymorphus* and *bicarinatus* before me, as well as Dr. Taylor's topotypes of *nelsoni*, I fail to note anything of a distinctive nature in the *nelsoni* that would serve to separate them from *bicarinatus*. The characters I heretofore considered diagnostic of *nelsoni*, as the immucronate ventrals, poor development of dorsolateral and lateral tubercles, smaller enlarged dorsals, and different proportions of the head, lack confirmation in these newly available individuals. In all the characters named, as well as others, I can not distinguish between *nelsoni* and *bicarinatus*. The Cuicatlán material (*nelsoni*) is fully as tuberculate, ventrals as mucronate, enlarged dorsals as big, and the head proportions are entirely within the range of variation exhibited by a good series of specimens from Cuernavaca, Morelos (*bicarinatus*). I must therefore regard *nelsoni* as a synonym of *bicarinatus*. The illusory distinction of the type specimen reflects a common type of individual or local variation seen in all Urosauri, especially in remote or end populations.

The specimens from Totolapan, Oaxaca (EHT–HMS nos. 14051–53), are interesting variants of the *anonymorphus* type; superficially they are somewhat like intergrades between this latter race and *bicarinatus*, although immediately recognizable as being much closer to *anonymorphus*. I think that here we are dealing with another case of the recrudescence of parental characters, in relatively remote populations of a derivative form, which occurs elsewhere in the Urosauri (cf. *U. clarionensis* and *U.*

[1] Received October 10, 1942.